



semiconductor relay, 1-phase 3RF2 width 45 mm, 20 A 48-460 V / 24 V DC screw terminal for mounting on available cooling surfaces

product brand name	SIRIUS
product designation	solid-state relay
design of the product	1-pole
product type designation	3RF20
General technical data	
product function	zero-point switching
power loss [W] for rated value of the current	
• at AC in hot operating state	28.6 W
• at AC in hot operating state per pole	28.6 W
• without load current share typical	0.4 W
insulation voltage rated value	600 V
protection class IP	IP20
protection class IP on the front according to IEC 60529	IP20
shock resistance according to IEC 60068-2-27	15g / 11 ms
vibration resistance according to IEC 60068-2-6	2g
reference code according to IEC 81346-2	Q
Substance Prohibitance (Date)	05/28/2009
SVHC substance name	Lead - 7439-92-1 Lead monoxide (lead oxide) - 1317-36-8
Net Weight	0.084 kg
Main circuit	
number of poles for main current circuit	1
number of NO contacts for main contacts	1
number of NC contacts for main contacts	0
type of voltage of the operating voltage	AC
operating voltage	
• at AC	
— at 50 Hz rated value	48 ... 460 V
— at 60 Hz rated value	48 ... 460 V
operating frequency rated value	50 ... 60 Hz
relative symmetrical tolerance of the operating frequency	10 %
operating range relative to the operating voltage at AC	
• at 50 Hz	40 ... 506 V
• at 60 Hz	40 ... 506 V
operational current rated value maximum	20 A
operational current	
• at AC-1 at 400 V rated value	20 A
• at AC-51 rated value	20 A
• according to UL 508 rated value	20 A

rate of voltage rise at the thyristor for main contacts maximum permissible	500 V/ μ s
blocking voltage at the thyristor for main contacts maximum permissible	1 200 V
reverse current of the thyristor	10 mA
derating temperature	40 °C
surge current resistance rated value	200 A
I ² t value maximum	200 A ² ·s
Control circuit/ Control	
type of voltage of the control supply voltage	DC
control supply voltage 1 at DC rated value maximum permissible	30 V
control supply voltage 1 at DC	15 ... 24 V
control supply voltage - at DC initial value for signal <1> detection - at DC full-scale value for signal<0> recognition	15 V 5 V
control current at minimum control supply voltage at DC	13 mA
control current at DC rated value	15 mA
ON-delay time	1 ms; additionally max. one half-wave
OFF-delay time	1 ms; additionally max. one half-wave
Auxiliary circuit	
number of CO contacts for auxiliary contacts	0
Installation/ mounting/ dimensions	
fastening method side-by-side mounting	Yes
fastening method	screw fixing
design of the thread of the screw for securing the equipment	M4
tightening torque of fixing screw maximum	1.5 N·m
tightening torque [lbf·in] of fixing screw maximum	13 lbf·in
height	58 mm
width	45 mm
depth	48 mm
Connections/ Terminals	
product component removable terminal for auxiliary and control circuit	Yes
type of electrical connection - for main current circuit - for auxiliary and control circuit	screw-type terminals screw-type terminals
type of connectable conductor cross-sections - for main contacts - solid - finely stranded with core end processing - for AWG cables for main contacts	2x (1.5 ... 2.5 mm ²), 2x (2.5 ... 6 mm ²) 2x (1 ... 2.5 mm ²), 2x (2.5 ... 6 mm ²), 1x 10 mm ² 2x (14 ... 10)
connectable conductor cross-section for main contacts - solid or stranded - finely stranded with core end processing	1.5 ... 6 mm ² 1 ... 10 mm ²
type of connectable conductor cross-sections - for auxiliary and control contacts - solid - finely stranded with core end processing - finely stranded without core end processing - for AWG cables for auxiliary and control contacts	1x (0.5 ... 2.5 mm ²), 2x (0.5 ... 1 mm ²) 1x (0.5 ... 2.5 mm ²), 2x (0.5 ... 1 mm ²) 1x (0.5 ... 2.5 mm ²), 2x (0.5 ... 1 mm ²) 1x (20 ... 12)
AWG number as coded connectable conductor cross section for main contacts	14 ... 10
tightening torque - for main contacts with screw-type terminals - for auxiliary and control contacts with screw-type terminals	2 ... 2.5 N·m 0.5 ... 0.6 N·m
tightening torque [lbf·in] for main contacts with screw-type terminals	7 ... 10.3 lbf·in

• for auxiliary and control contacts with screw-type terminals	4.5 ... 5.3 lbf-in
design of the thread of the connection screw	
• for main contacts	M4
• of the auxiliary and control contacts	M3
stripped length of the cable	
• for main contacts	10 mm
• for auxiliary and control contacts	7 mm
Electrical Safety	
protection class IP on the front according to IEC 60529	IP20
touch protection on the front according to IEC 60529	finger-safe, for vertical contact from the front
Ambient conditions	
installation altitude at height above sea level maximum	1 000 m
ambient temperature	
• during operation	-25 ... +60 °C
• during storage	-55 ... +80 °C
Electromagnetic compatibility	
conducted interference	
• due to burst according to IEC 61000-4-4	2 kV / 5 kHz behavior criterion 2
• due to conductor-earth surge according to IEC 61000-4-5	2 kV behavior criterion 2
• due to conductor-conductor surge according to IEC 61000-4-5	1 kV behavior criterion 2
• due to high-frequency radiation according to IEC 61000-4-6	140 dBuV in the frequency range 0.15 ... 80 MHz, behavior criterion 1
field-based interference according to IEC 61000-4-3	80 MHz ... 1 GHz 10 V/m, behavior criterion 1
electrostatic discharge according to IEC 61000-4-2	4 kV contact discharging / 8 kV air discharging, behavior criterion 2
conducted HF interference emissions according to CISPR11	Class A for industrial environment
field-bound HF interference emission according to CISPR11	Class B for the domestic, business and commercial environments
Short-circuit protection, design of the fuse link	
manufacturer's article number • of gS fuse for semiconductor protection at NH design usable • of full range R fuse link for semiconductor protection at cylindrical design usable • of back-up R fuse link for semiconductor protection at NH design usable • of back-up R fuse link for semiconductor protection at cylindrical design 10 x 38 mm usable • of back-up R fuse link for semiconductor protection at cylindrical design 14 x 51 mm usable • of back-up R fuse link for semiconductor protection at cylindrical design 22 x 58 mm usable	3NE1813-0: These fuses have a smaller rated current than the semiconductor relays 5SE1320 3NE8015-1 3NC1016: These fuses have a smaller rated current than the semiconductor relays 3NC1425 3NC2220
manufacturer's article number of the gG fuse • at NH design usable • at cylindrical design 14 x 51 mm usable	3NA6801: These fuses have a smaller rated current than the semiconductor relays 3NW6101-1: These fuses have a smaller rated current than the semiconductor relays
manufacturer's article number • of NEOZED fuse usable	5SE2306: These fuses have a smaller rated current than the semiconductor relays
last modified:	8/4/2025 